



## **e-Procurement submitting Solution Architecture Template (SAT)**



## Change control

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|--------------------|---------|
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# 1 INTRODUCTION

This document contains the description for a Solution Architecture Document (SAT) for the e-Procurement submitting business capability.

This SAT is based on EIRA v2.0.0, which is aligned with ArchiMate® 3.0.

The ArchiMate source are embedded in this document in the “Archi format” as well as in “The Open Group ArchiMate Model Exchange File Format”.



SAT e-Procurement  
submitting v1.0.0 be



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## 1.1 Purpose of this document

Enterprise and Solution architects can use this document to design solution architectures in the domain of e-Procurement submitting business capability.

## 1.2 List of acronyms used in this document

Table 1-1

| ABB              | Architecture Building Block  |
|------------------|--|
| BII              | Business Interoperability Interfaces   |
| CA               | Contracting Authority  |
| CEF              | Connecting Europe Facility   |
| CEN              | Comité Européen de Normalisation (European Committee for Standardization)      |
| CEN TC 440       | CEN Technical Committee 440 – Electronic Public Procurement                    |
| EIRA             | European Interoperability Reference Architecture                               |
| EO               | Economic Operator(s)   |
| GDPR             | General Data Protection Regulation   |
| HI               | Human Interface  |
| IES              | Interoperable European Solution  |
| ISA <sup>2</sup> | Interoperability solutions for public administrations, businesses and citizens |
| MMI              | Machine to Machine Interface   |
| SAT              | Solution Architecture Template   |
| SBB              | Solution Building Block  |
| UBL              | Universal Business Language  |

## 2 GOAL, DESCRIPTION AND TARGET AUDIENCE

This chapter gives the goals and a description on e-Procurement submitting business capability and indicates the target audience and their potential use of this Solution Architecture Template (SAT).

### 2.1 Goal

The purpose of this SAT is to provide guidance by defining a minimal, but holistic (legal, organisational, semantic and technical) interoperability architecture in the domain of e-Procurement submitting business capability. This SAT should allow businesses, citizens and public administrations to have a common understanding of the most-salient building blocks.

### 2.2 What is e-Procurement submitting business capability?

The e-Procurement submitting business capability covers the secure submission of tenders and/or catalogues in electronic format to the contracting body (contracting authority / contracting entity), which can receive and process it in compliance with applicable legal requirements.

### 2.3 What is a solution architecture template (SAT)

A Solution Architecture Template (SAT) is a specification extending the EIRA providing support to solution architects in a specific solution domain. An SAT contains a motivation (principles, requirements), a goal and a description of the supported functionalities, a sub-set of the EIRA core Architecture Building Blocks (ABBs) covering the four views, a set of specific ABBs extending EIRA's views enabling specific functionalities to be provided by implementations derived from the SAT and the interoperability specifications of selected ABBs and a narrative for each EIRA view.

The benefits of a SAT are the following:

- Provides architects with a common approach to cope with a specific interoperability challenge. It also places the focus on the key-points you need to consider.
- A solution architect can create a solution architecture by mapping existing Solution Building Blocks (SBBs) to an SAT, based on the interoperability specifications that are provided. This is done by providing SBBs for the ABBs identified in the SAT.
- When an architect creates an SAT, he/she can define the interoperability specifications for the SAT's ABBs and moreover recommend specific SBBs which produces faster and more interoperable results.
- An SAT can be created within and across the different views of the EIRA. An SAT can then support architects specialised in different interoperability levels."

### 2.4 Target audience

This document has the following target audience:

**Table 2-1**

| Audience           | Description   |
|--------------------|---|
| Solution Architect | Solution architects in the need of understanding, implementing, or describing an e-Procurement submitting solution. |
| Policy maker       | Policy makers studying the implications due to policy changes in the area of e-Procurement, submitting part         |

|   |  |
|---|--|
| Public Administration /<br>Members States | Public Administrations of the European Union that need to have a holistic view of the e-Procurement, submitting part interoperability architecture |
|---|--|

### 3 E-PROCUREMENT SUBMITTING INTEROPERABILITY MAPPED TO THE EIRA

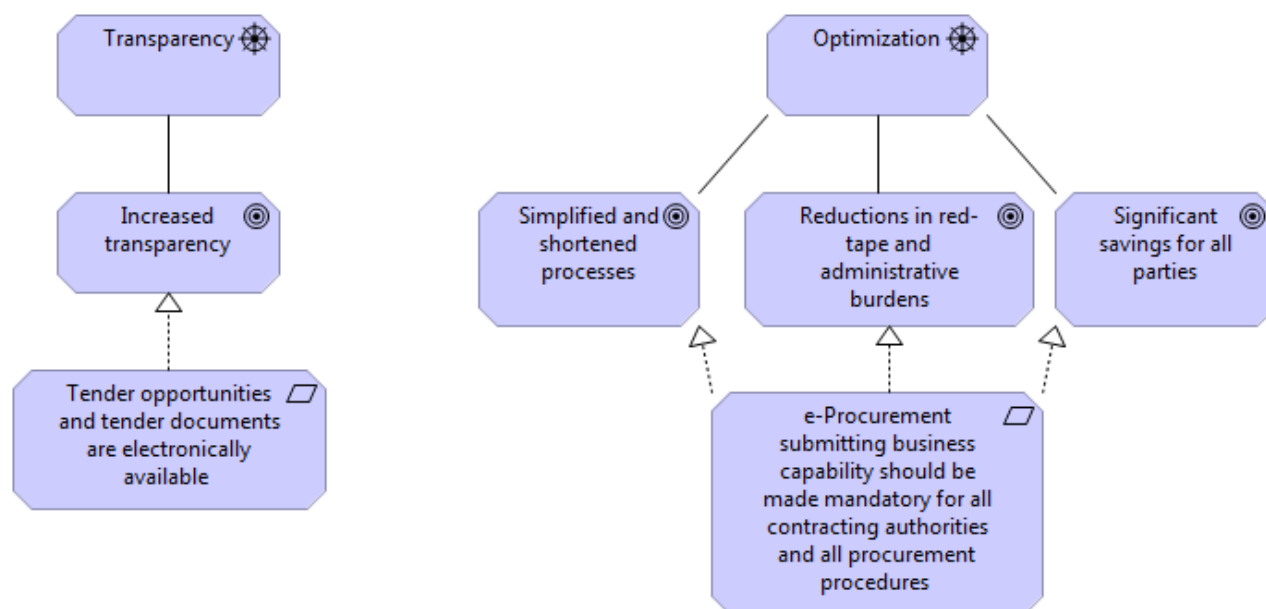
This chapter contains for each EIRA view the corresponding ArchiMate model and narrative. Next to the SAT's EIRA architecture building blocks, the ArchiMate model includes, where applicable, the related specifications, principles and requirements.

The models have been scaled down to fit with the text, they are included in bigger format in the appendix.

#### 3.1 ArchiMate Motivation extension

The following specific requirements complement the general ones specified in the e-Procurement core SAT and must be respected by the e-Procurement submitting solution:

- *tender opportunities and tender documents are electronically available.*
- *submitting should be made mandatory for all contracting authorities and all procurement procedures.*



#### 3.2 How to use this SAT

The present SAT is specifically related to the submitting business capability of e-Procurement. The present document has to be used in complement to the SAT related to core e-Procurement.

Indeed:

- The e-Procurement core SAT focuses on the architecture that is common to all e-Procurement business capabilities.
- The present e-Procurement submitting SAT addresses the architecture that is specific to the submitting business capability.



Said in other words, the e-Procurement core SAT provides the foundation for the core e-Procurement, while the present SAT complements it by addressing the e-Procurement submitting specificities.

A solution architect that uses the two Solution Architecture Templates typically wants to perform a gap-analysis between an existing solution and these SATs, or he/she wants to model a solution in the domain of e-Procurement submitting and uses the two SATs as guidance.

### **3.2.1 e-Procurement submitting Gap Analysis use case**

Using the two e-Procurement core and e-Procurement submitting SATs for gap analysis, the solution architect can map the building blocks of the solution to the ones in the two SATs and identify which building blocks are missing. These building blocks can either indicate missing functionality or missing interoperability specifications.

### **3.2.2 e-Procurement submitting Building a solution architecture use case**

When building a solution architecture, the solution architect is expected to use the four different EIRA views in the two e-Procurement core and e-Procurement submitting SATs and provide a solution in the form of Solution Building Blocks (SBBs) for the Architecture Building Blocks (ABBs) that are indicated. This is done by replacing the Architecture Building Block (ABB) with an annotated Solution Building Block (SBB). The existing Solution Building Blocks in the two SATs should not be removed and replaced. However, the acknowledgement of reusing these building blocks can be done by removing the ABBs which they specialise.

Interoperability Specifications (IoP specs) are added as specialisation of an Interoperability ABB, implemented in the form of an SBB and attached to an ABB as interoperability requirements. The final solution should only contain the implementation (the SBB) of the IoP Spec

The result will be a solution architecture that will contain only SBBs, all ABBs should have been removed (in the case this SAT already provides SBBs for this ABB) or replaced by SBBs (solutions that implement that ABB).



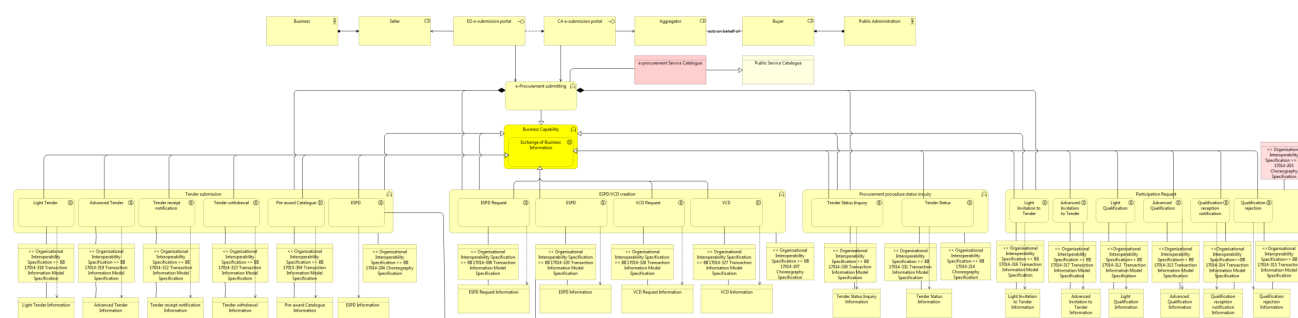
The SAT is a document describing the needed Architecture Building Blocks for a desired solution. This should not be taken as restrictive but as advisory. When an Architecture Building Block (ABB) is present for which there is no implementation foreseen in the form of a Solution Building Block (SBB), it is *strongly* recommended, but not mandatory, to take this ABB into consideration in the final solution.

### 3.3 e-Procurement submitting Legal View

There is no supplementary building block in this specific e-Procurement submitting Legal View in comparison with the e-Procurement core Legal View provided in the e-Procurement core SAT. The core Legal View specified in the e-Procurement core SAT applies.

There is no supplementary building block in this specific e-Procurement submitting Legal View in comparison with the e-Procurement core Legal View provided in the e-Procurement core SAT.

The Organisational view for the e-Procurement submitting business capability consists in the following sub-set of EIRA Architecture Building Blocks (ABBs) as well as a number of predefined Solution Building Blocks (SBBs):



The Economic Operator e-Procurement submitting portal is used by the Seller (who becomes a candidate or a tenderer) to submit requests to participate, tenders and/or catalogues allowing the Buyer to receive and process them in compliance with applicable legal requirements in the Contracting Authority e-Procurement submitting portal<sup>1</sup>.

## 1. Tender submission

- Light Tender
- Advanced Tender
- ESPD
- Tender receipt notification
- Tender withdrawal
- Pre-award Catalogue

- Light Qualification
- Advanced Qualification
- Qualification reception notification
- Qualification rejection
- Light Invitation to Tender

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- f. Advanced Invitation to Tender
- 3. ESPD/VCD creation
  - Exchanges of Business Information:
    - a. ESPD Request
    - b. ESPD
    - c. VCD Request
    - d. VCD
- 4. Procurement procedure status inquiry
  - Exchanges of Business Information:
    - a. Tender Status Inquiry
    - b. Tender Status

The following table lists the Organisational Interoperability Specifications applying to the Business Capabilities and Exchanges of Business Information:

**Table 3-1**

| <b>Business Capability and Exchange of Business Information</b> | <b>Organisational Interoperability Specification</b> |
|---|--|
| Tender submission   | BII 17014-204  |
| Light Tender  | BII 17014-318  |
| Advanced Tender   | BII 17014-319  |
| ESPD  | BII 17014-320  |
| Tender receipt notification                                     | BII 17014-322  |
| Tender withdrawal   | BII 17014-323  |
| Pre-award Catalogue   | BII 17015-304  |
| Participation Request   | BII 17014-203  |
| Light Qualification   | BII 17014-312  |
| Advanced Qualification  | BII 17014-313  |
| Qualification reception notification                            | BII 17014-314  |
| Qualification rejection   | BII 17014-315  |
| Light Invitation to Tender                                      | BII 17014-316  |
| Advanced Invitation to Tender                                   | BII 17014-317  |
| ESPD/VCD creation   | BII 17014-207  |
| ESPD Request  | BII 17014-308  |
| ESPD  | BII 17014-320  |
| VCD Request   | BII 17014-326  |
| VCD   | BII 17014-327  |
| Procurement procedure status inquiry                            | BII 17014-214  |
| Tender Status Inquiry   | BII 17014-330  |
| Tender Status   | BII 17014-331  |

### **ESPD/VCD creation**

ESPD/ VCD Creation choreography describes the process and its variants by which exclusion and selection criteria are transmitted and answered by the seller (economic operator) either on basis of self-declaration or references to documents on remote locations such as links to national registers (ESPD) or evidences accompanying the response (VCD).

The ESPD requester can be the buyer (contracting body) that has established the exclusion and selection criteria required in the context of the tendering procedure or can be the Seller who delegates filling in the ESPD by a service provider.

### **ESPD Request**

ESPD Request BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document for requesting qualification information through a European Single Procurement Document (ESPD), part of a procurement procedure.

### **ESPD**

ESPD BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document for providing qualification information in response to an ESPD request through a European Single Procurement Document (ESPD), part of a procurement procedure.

### **VCD Request**

VCD Request BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document for requesting qualification information with their evidences as attachments through a Virtual Company Dossier (VCD), at least for the awarded tenderer.

### **VCD**

VCD BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document for providing qualification information and their accompanying evidences in response to a VCD Request.

## **Participation Request**

Participation Request choreography describes the process and its variants by which the buyer (the contracting body) can invite sellers (economic operators) to participate in a tendering process or the seller requests to participate and provides his qualification details to allow the buyer to assess whether he meets the criteria resulting in inviting him to participate.

The key aspects covered by this choreography are:

- The seller (economic operator) decides whether he participates in the tendering procedure, but no communication needs to be sent back to the contracting body if he decides not to.
- An economic operator can submit structured or unstructured qualification documents to a buyer (Contracting body) as specified in the call for tender
- The contracting body has decided to invite an economic operator to participate in a tendering procedure, sending the invitation to tender
- The contracting body makes the invitation to tender documents available to the economic operator

### **Light qualification**

Light qualification BII transaction provides the set of interoperability specifications to support the electronic exchange of an unstructured qualification document as required in the call for tender.

### **Advanced qualification**

Advanced qualification BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured qualification document as required in the call for tender.

### **Qualification reception notification**

Qualification reception notification BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured electronic document for confirming the reception of a qualification.

### **Qualification rejection**

Qualification rejection BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured electronic document notifying that a qualification has been rejected including the reason for rejection.

### **Light invitation to tender**

Light invitation to tender BII transaction provides the set of interoperability specifications to support the electronic exchange of an invitation to tender as a structured electronic document with unstructured attachments providing the information necessary to participate in the tendering procedure.

### **Advanced invitation to tender**

Advanced invitation to tender BII transaction provides the set of interoperability specifications to support the electronic exchange of an invitation to tender as a structured electronic document providing the information necessary to participate in the tendering procedure.

## **Tender Submission**

Tender Submission choreography describes the process and its variants by which the seller (economic operator) can participate in the tendering phase of a procurement procedure.

The key aspects covered by this choreography are:

- An economic operator can submit a structured or unstructured tender to the buyer as specified in the call for tender depending in some procedures to a successful prequalification.
- An economic operator receives a reception confirmation for his submitted tender and the time when received.
- An economic operator can withdraw a submitted tender.

### **Light tender**

Light tender BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document of the tender metadata and providing unstructured or semi-structured content of tender information in attachments as required in the call for tender.

### **Advanced tender**

Advanced tender BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document of the tender metadata and providing structured content of tender information in attachments as required in the call for tender.

### **Tender receipt notification**

Tender receipt notification BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured electronic document for confirming the reception of a tender.

### **ESPD**

ESPD BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document for providing qualification information in response to an ESPD request through a European Single Procurement Document (ESPD), part of a procurement procedure.

### **Tender withdrawal**

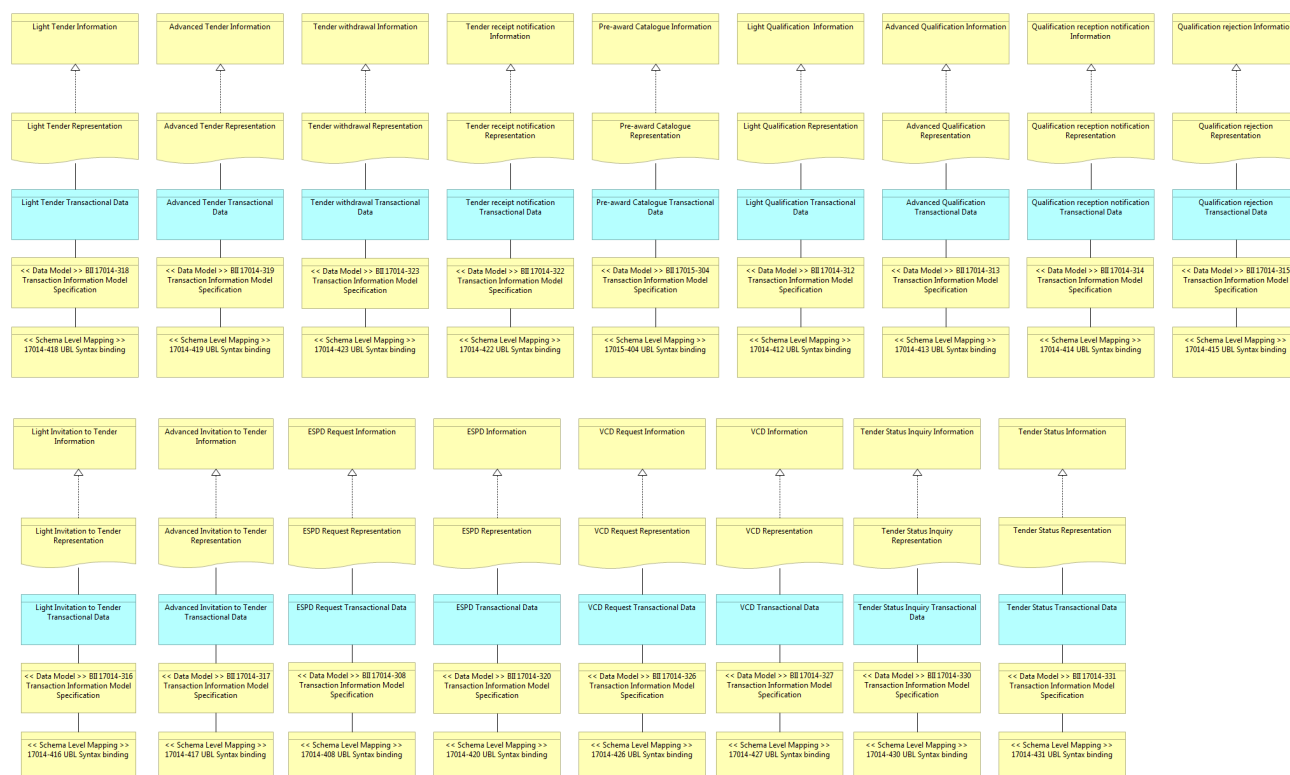
Tender withdrawal BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document for withdrawing a tender.

### **Pre-award Catalogue**

Pre-award catalogue provides the set of interoperability specifications to support the electronic exchange of information on items, e.g., prices, ordering information or properties, offered by supplier in a structured format as part of a tender.

### 3.5 e-Procurement submitting Semantic View

The Semantic view of this SAT consists of the following sub-set of EIRA Architecture Building Blocks (ABBs) as well as a number of predefined Solution Building Blocks (SBBs):



The Transactional Data ABBs represent at the semantic point of view the business information exchanged at the organisational point of view.

Consequently, there are 17 Transactional Data ABBs in the e-Procurement submitting semantic view:

1. Light Tender
2. Advanced Tender
3. Tender receipt notification
4. Tender withdrawal
5. Pre-award Catalogue
6. Light Qualification
7. Advanced Qualification
8. Qualification reception notification
9. Qualification rejection
10. Light Invitation to Tender
11. Advanced Invitation to Tender
12. ESPD Request
13. ESPD
14. VCD Request



15. VCD

16. Tender Status Inquiry

17. Tender Status

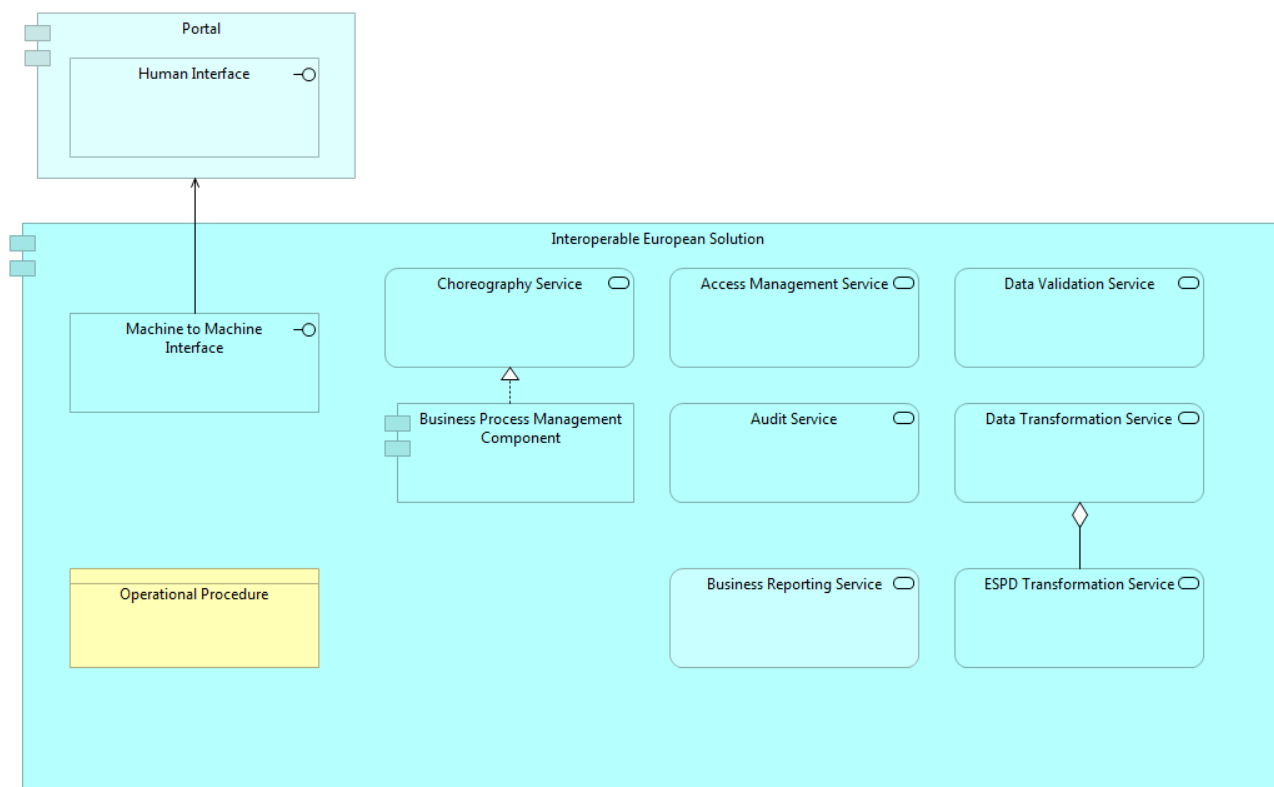
Each Transactional Data is defined in a Data Model SBB, the BII Transaction Information Model Specification, itself associated to a Schema Level Mapping SBB, the UBL Syntax Binding specification. These are listed in the following table:

**Table 3-2**

| <b>Transactional Data</b>            | <b>Transaction Information Model Specification</b> | <b>UBL Syntax Binding</b> |
|--------------------------------------|--|---------------------------|
| Light Qualification                  | BII 17014-312                                      | 17014-412                 |
| Advanced Qualification               | BII 17014-313                                      | 17014-413                 |
| Qualification reception notification | BII 17014-314                                      | 17014-414                 |
| Qualification rejection              | BII 17014-315                                      | 17014-415                 |
| Light Tender                         | BII 17014-318                                      | 17014-418                 |
| Advanced Tender                      | BII 17014-319                                      | 17014-419                 |
| Tender receipt notification          | BII 17014-322                                      | 17014-422                 |
| Tender withdrawal                    | BII 17014-323                                      | 17014-423                 |
| Pre-award Catalogue                  | BII 17015-304                                      | 17015-404                 |
| ESPD Request                         | BII 17014-308                                      | 17014-408                 |
| ESPD                                 | BII 17014-320                                      | 17014-420                 |
| VCD Request                          | BII 17014-326                                      | 17014-426                 |
| VCD                                  | BII 17014-327                                      | 17014-427                 |
| Tender Status Inquiry                | BII 17014-330                                      | 17014-430                 |
| Tender Status                        | BII 17014-331                                      | 17014-431                 |

### 3.6 e-Procurement submitting Technical View – Application

There is one supplementary building block in this e-Procurement submitting Technical View – Application in comparison with e-Procurement core Technical View – Application provided in the e-Procurement core SAT: the ESPD Transformation Service, which is part of the Data Transformation Service.



The Representations of Transactional Data that the MMI has to process are the ones shown in the specific Semantic View shown in the previous paragraph of the present document.

### **3.7 e-Procurement submitting Technical View – Infrastructure**

There is no supplementary building block in this specific e-Procurement submitting Technical View – Infrastructure in comparison with the e-Procurement core Technical View – Infrastructure provided in the e-Procurement core SAT. The core Technical View – Infrastructure specified in the e-Procurement core SAT applies.

There is no supplementary building block in this specific e-Procurement submitting Technical View – Infrastructure in comparison with the e-Procurement core Technical View – Infrastructure provided in the e-Procurement SAT.

## **4 REFERENCES**

The references listed in the e-Procurement core SAT apply.

## **5 ACKNOWLEDGEMENTS**

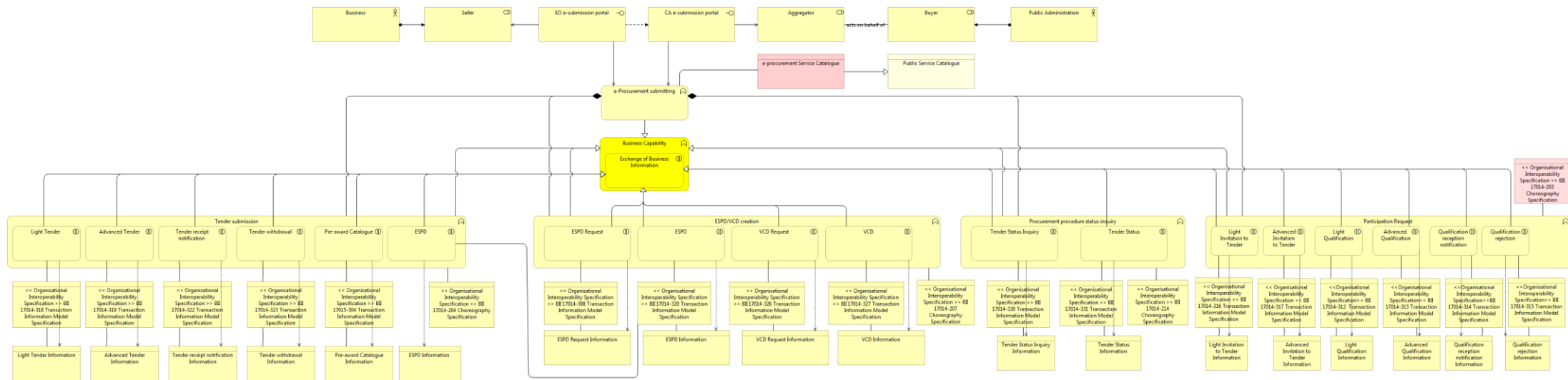
The creation of this SAT was made possible with the help of CEN Technical Committee 440 – Electronic Public Procurement. We would like to thank the following people for their input (alphabetical order):

- APOLOZAN Liviu
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- FROMYR Jostein
- GUASCH Cécile

## 6 APPENDIX: LEGAL VIEW

There is no supplementary building block in this specific e-Procurement submitting Legal View in comparison with the e-Procurement core Legal View provided in the e-Procurement core SAT.

## 7 APPENDIX: ORGANISATIONAL VIEW

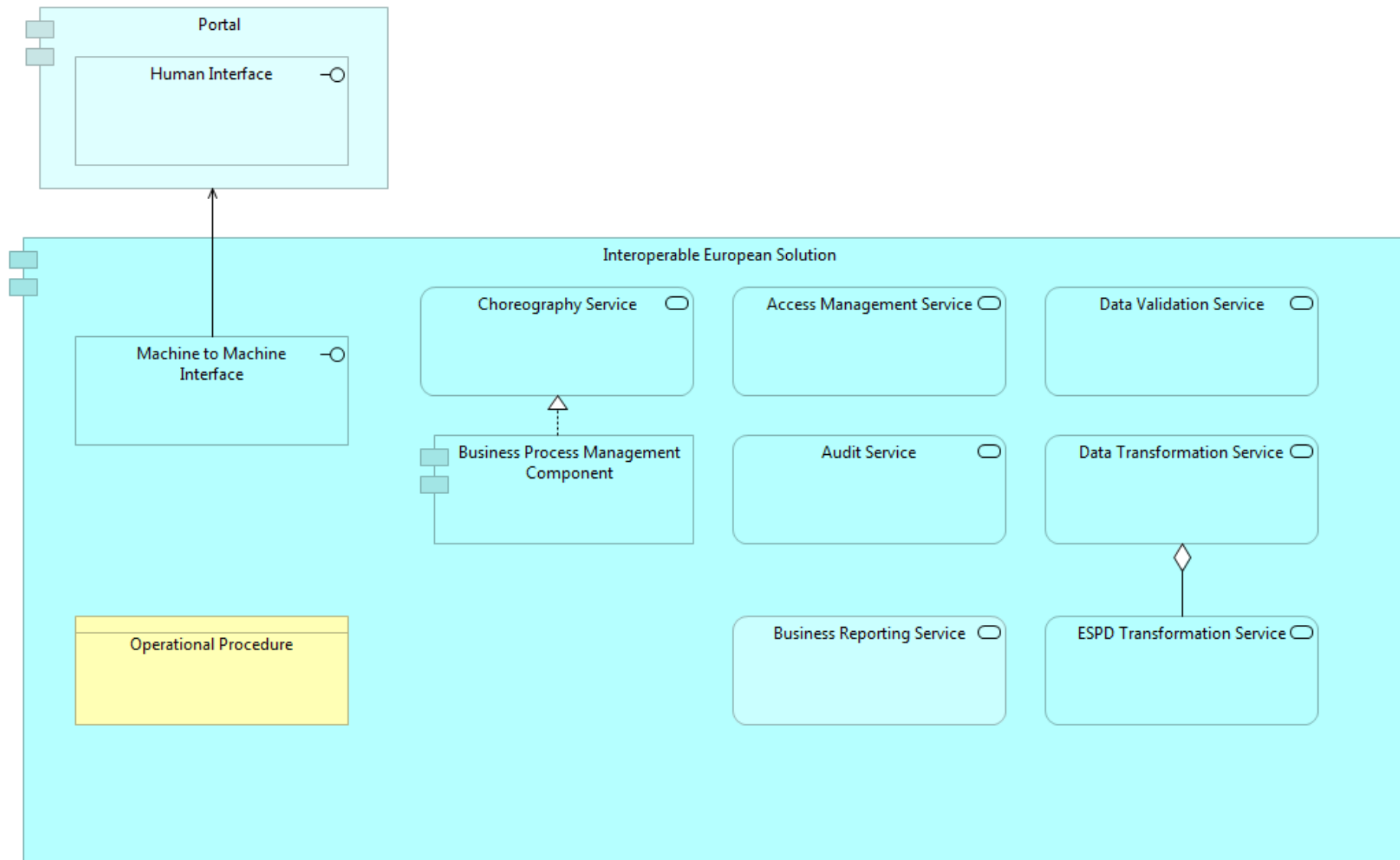


## 8 APPENDIX: SEMANTIC VIEW





## 9 APPENDIX: TECHNICAL VIEW – APPLICATION



## 10 APPENDIX: TECHNICAL VIEW – INFRASTRUCTURE

There is no supplementary building block in this specific e-Procurement submitting Technical View – Infrastructure in comparison with the e-Procurement core Technical View – Infrastructure provided in the e-Procurement SAT.